

Where Are We and Where Are We Going



ZeaChem

Jim Imbler, President and CEO
Biomass 2009: Fueling our Future
March 17th, 2009

Where Are We ...



Where Are We ... Technology

- “Third-generation”
 - Best of bio & thermo chemical processes
 - Hybrid cellulosic technology – “Prius”
 - Highest theoretical yield 160 gal/BDT
- Proven components & processes
 - Natural organism; no enzymes
 - Ultra-low CO₂ net impact
- 2 carbon (C₂) chain products
 - Ethanol, ethyl acetate, ethylene...



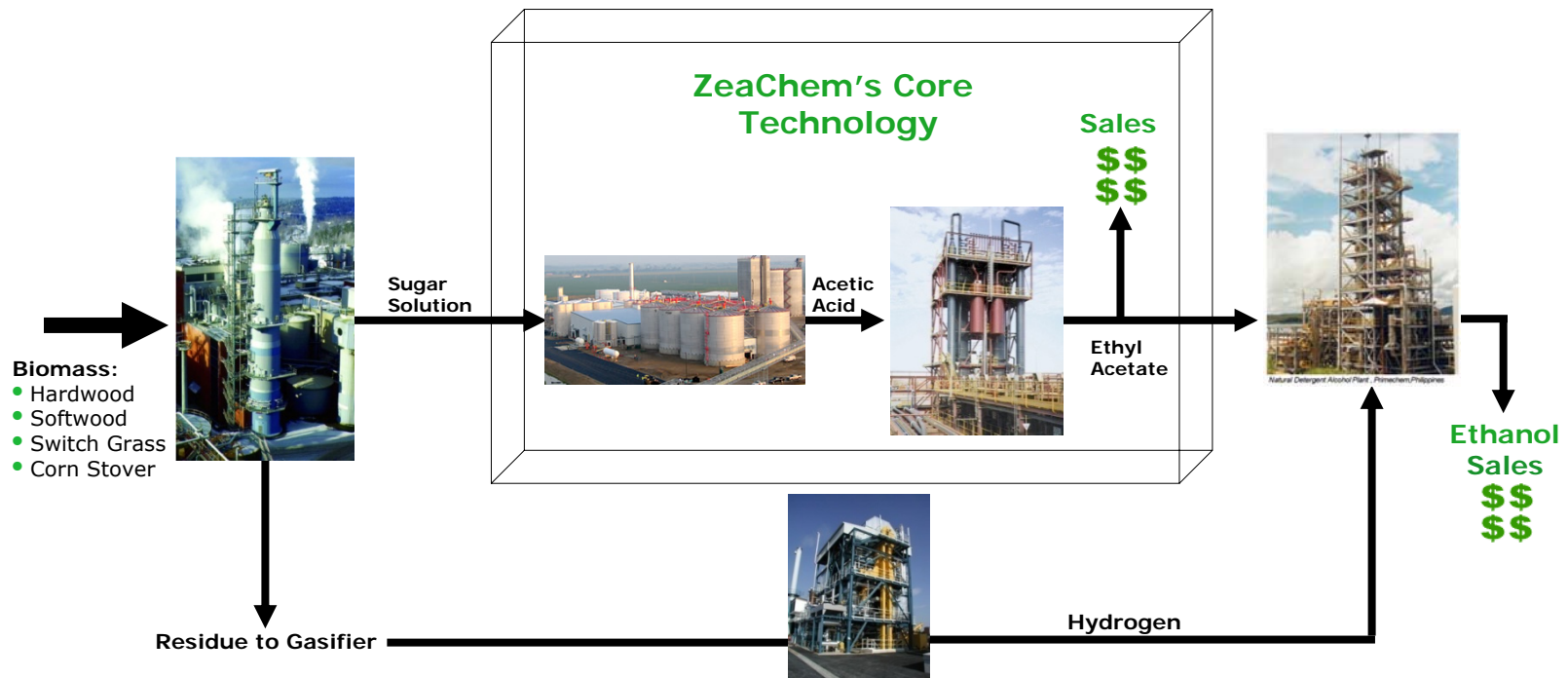
Where Are We ... **Feedstock**

- ZeaChem process is feedstock agnostic
 - Hardwood, softwood, grasses, corn stover, etc.
- Dedicated sustainable energy crops
 - Geographic diversity, “Grow where we go”
- Contract with GreenWood Resources
 - Supply high yield hybrid poplar feedstock
- Benefits
 - Efficient harvesting, cost effective
 - “Store on the stump”
 - Integrate energy crop + biorefinery = minimal footprint, low CO₂



Where Are We ... Deployment of 1st Plant

- Engineering currently underway
- Begin construction in 2009
- Run wide variety of biomass feedstocks



Demonstrate integration with proven technology

Where Are We ... Nature's Terminator

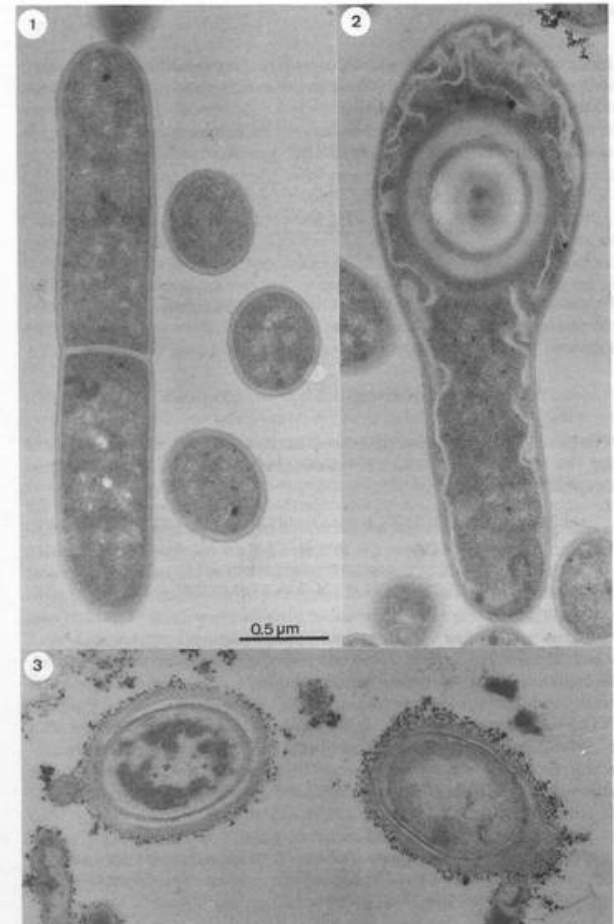
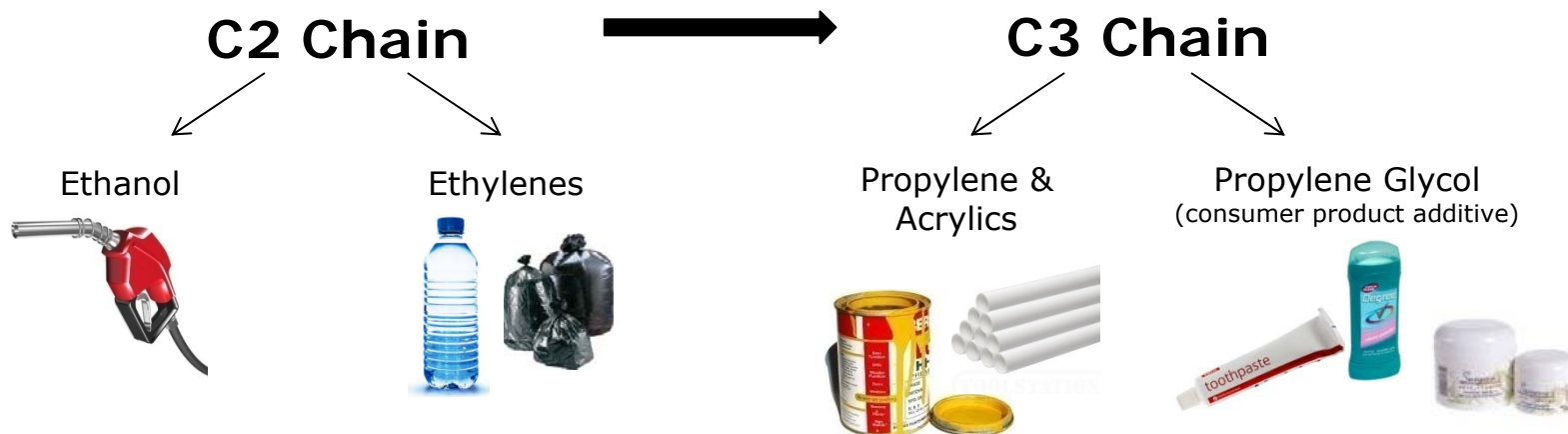


Figure 1.2. Thin sections of chemolithoautotrophically cultivated *Clostridium thermoaceticum*. Panel 1: vegetative cell; panel 2: sporulated cell; panel 3: spore.

Where Are We Going...

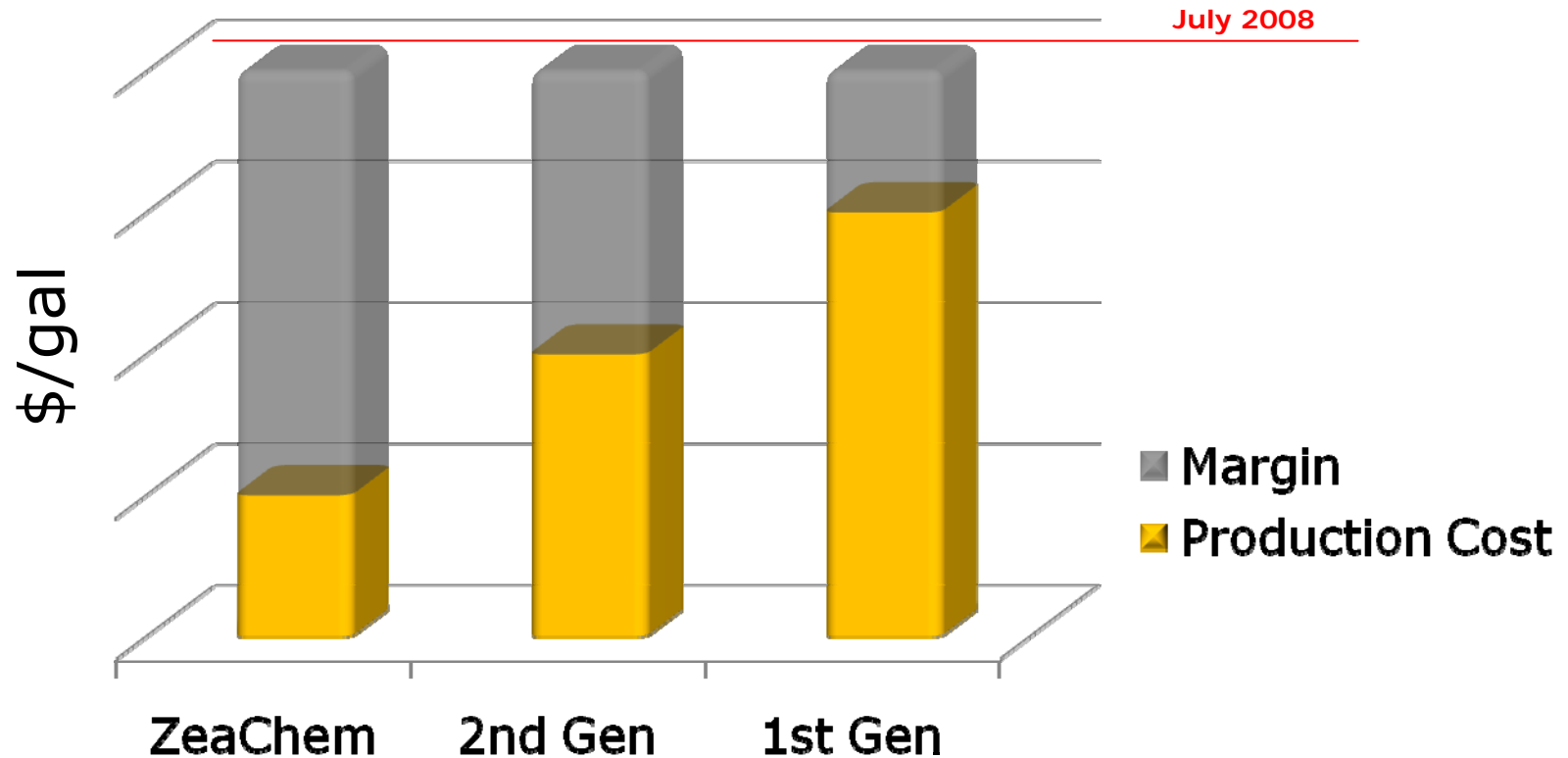


Where Are We Going... Advancing Market

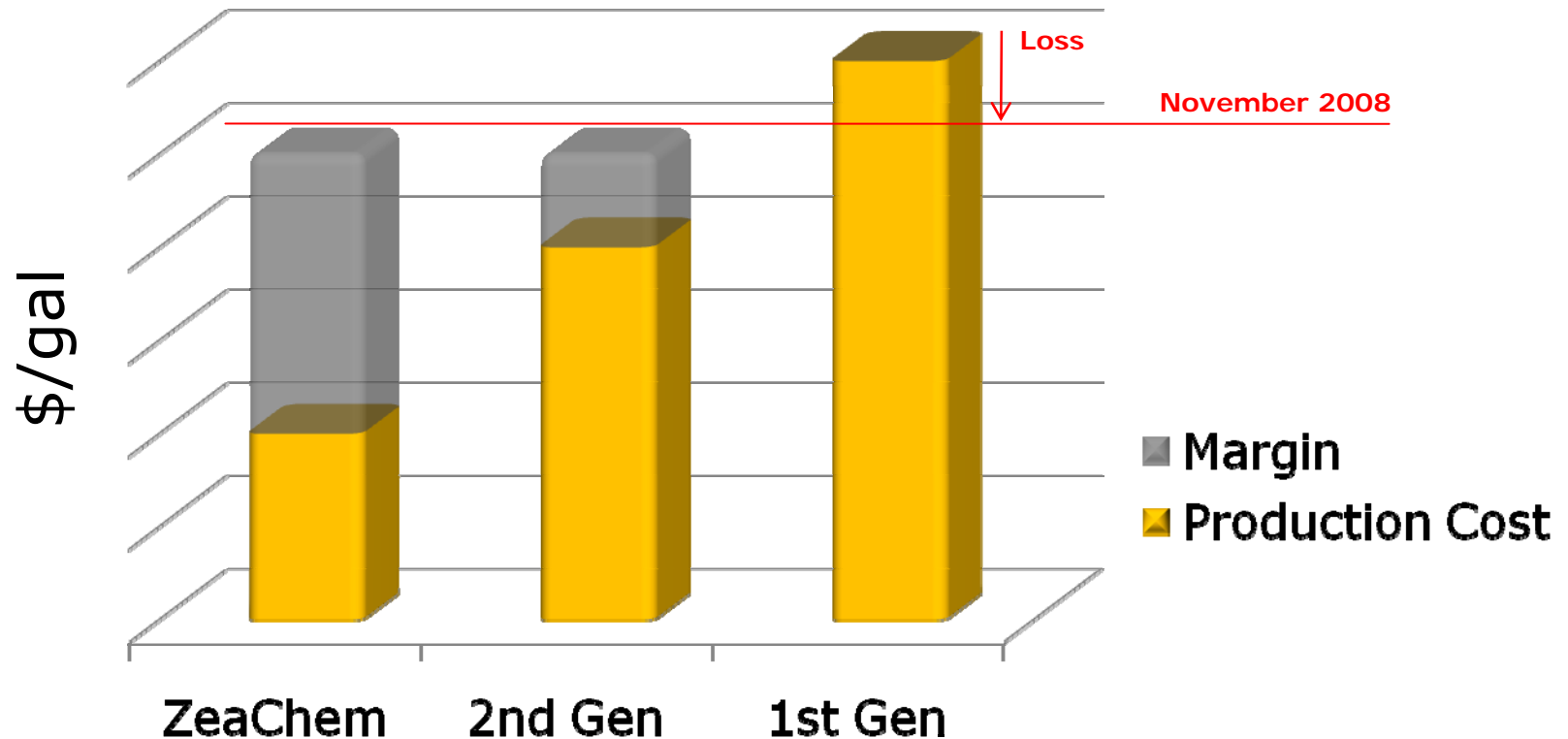


- Start with ethanol and C₂ chain
- Expand to C₃ chain – and beyond
 - Dramatically increases market scope
 - Hedge against market volatility

Where Are We Going... Efficiency Drives Economics



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Where Are We Going...

Energy Farm of the Future

- Mosaic design of multiple feedstocks, low risk
- Year-round harvesting
- Advantages: economic, environmental and social



Where Are We Going... Partnerships



- Strategic Partners
 - Valero Energy Corporation
 - Global chemical company...stay tuned

- Feedstock



- VC Investors



- Research



Where Are We Going... **Deployment**

- First plant begin construction 2009
- Next Steps
 - Scale up to commercial plant from 1st plant
 - Evaluating licensing and JV agreements



ZeaChem Summary

- Where we are...
 - Highest yield, best of biochemical and thermochemical
 - Proven technology, naturally occurring organism
 - Engineering underway for 1st plant, C₂ chain products
- Where are we going...
 - Strategic partnerships; biofuels and biochemicals
 - Break ground on 1st biorefinery, scale up to commercial
 - C₃ chain products

